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(54) **Perfumed hypochlorite bleaching compositions.**

(57) Liquid aqueous bleaching compositions are disclosed which are suitable for use in diluted form. The compositions comprise hypochlorite and a bleach stable perfume. The compositions have a pH as is of from 11.5 to 14, and comprise buffering means whereby said pH of the diluted composition is buffered to a constant value throughout use.

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### Technical field

The present invention relates to a liquid bleaching composition which is suitable both for laundry and household applications. Compositions herein are particularly suitable in laundry applications, as a pre-wash bleaching composition.

### Background of the invention

Liquid bleaching compositions are well known in the art. Amongst the different bleaching compositions available, those relying on bleaching by hypochlorite are often preferred, mainly for performance reasons. These hypochlorite-based compositions are typically used in dilute form and are suitable both for laundry and household applications. However a major drawback associated with chlorine-based compositions is the malodor they generate during and after use. Indeed, not only does the composition itself smell chlorine bleach, but the malodor remains noticeable on fabrics or surfaces which have been treated with said compositions, as well as on the skin of the user of the composition, even after the bleaching composition has been thoroughly rinsed away.

Formulators have tried to solve that problem by designing perfumed chlorine-based bleaching compositions. However, this has proved difficult mainly for two reasons. Firstly, only a few perfume components are available which are stable in a strong oxidative environment such as a chlorine-based bleaching composition, resulting in limited flexibility in designing perfumes for such compositions. Secondly, chlorine bleach odor is strong and therefore difficult to mask even when perfumes are present.

It is thus an object of the present invention to provide a chlorine bleaching composition wherein the chlorine odor is reduced during and after use.

Various solutions to this problem have been discussed in the art. See for instance JP 63108099, where sulphonates were proposed to diminish chlorine odor. See also ES 8800652 which proposes a process for packaging chlorine bleach where perfume is injected into the container just before the container is closed. See also JP62205200 which proposes certain perfume ingredients in combination with certain surfactants.

Our invention proposes a simple solution to this problem. We have now found that a chlorine-based bleaching composition suitable for use in diluted form could be formulated, which exhibits a reduced chlorine odor upon use, by formulating an aqueous bleaching composition comprising an alkali metal hypochlorite, at a pH of from 11.5 to 14, said composition further comprising buffering means whereby the pH of the diluted composition remains constant throughout use.

WO 88/05461, discloses a bleaching composition comprising sodium hypochlorite, sodium carbonate and sodium hydroxide

### Summary of the invention

The present invention encompasses an aqueous liquid bleaching composition suitable for use in diluted form, which comprises an alkali metal hypochlorite and a bleach stable perfume, whereby said perfume causes no more than 10 % loss of available chlorine in 5 days at 50 °C, said composition having a pH as is of from 11.5 to 14, and said composition further comprising pH buffering means whereby the pH of the diluted composition remains constant throughout use.

The present invention further encompasses a method of bleaching and washing fabrics or surfaces, wherein said fabrics or surfaces are contacted with a composition according to the present invention.

### Detailed Description of the invention

The compositions according to the present invention are aqueous bleaching compositions. Thus they comprise hypochlorite in an aqueous matrix. Various forms of alkali metal hypochlorite are commercially available and, although this is not critical for the present invention, it is preferred herein to use sodium hypochlorite. Compositions according to the present invention comprise a bleaching amount of alkali metal hypochlorite, which typically represents from 2% to 10% by weight of the total composition, based on active chlorine, of alkali metal hypochlorite. Preferred compositions herein comprise from 3% to 6% of alkali metal hypochlorite.

As a second essential feature, the compositions according to the present invention have a pH as is of from 11.5 to 14, preferably from 12.5 to 14. Suitable means to achieve such a pH value include potassium and sodium hydroxide.

The compositions according to the present invention are suitable for use in diluted form. The expression "use in diluted form" herein includes dilution by the user, which occurs for instance in household application or hand laundry applications, as well as dilution by other means, such as in a washing machine. Typical dilution levels are of from 0.5% to 20% for hand laundry application, 0.1% to 10% in a washing machine, and 0.5 to 20% for household application. As the composition according to the present invention is diluted, the pH of the composition as is changes, i.e. decreases, to a certain pH value which is hereinafter referred to as the pH of the diluted composition. For the purpose of the present invention, it is

essential that the pH of the diluted composition is buffered to a substantially constant value throughout use, i.e. from the moment the dilution is completed and until the hypochlorite bleaching composition is started to be rinsed away.

Therefore, as a third essential feature, the composition according to the present invention comprise pH buffering means whereby the pH of the diluted composition remains constant throughout use.

In order to achieve a proper buffering of the pH within the present invention, it has been found particularly useful to use silicate or carbonate salts, or mixtures thereof. Particularly useful are alkali metal salts of silicate and carbonate, preferably sodium silicate and sodium carbonate, both of which are commercially available, or mixtures thereof. Preferred compositions herein use a mixture of sodium carbonate and sodium silicate. Preferred composition herein comprise from 0.2% to 5% by weight of the total composition of sodium carbonate, preferably from 0.5% to 3%, and from 0.02% to 3% by weight of the total composition of sodium silicate, preferably from 0.04% to 3%.

As a fourth essential ingredient, the compositions according to the present invention comprise a bleach stable perfume, whereby said perfume causes no more than 10% loss of available chlorine in 5 days at 50 °C, preferably not more than 8% loss of available chlorine. Indeed, it is well known that most perfume ingredients are incompatible for use in a strong oxidizing environment such as hypochlorite bleaching compositions. In such compositions, the hypochlorite attacks the perfume, resulting not only in the degradation of the perfume but also in the loss of available chlorine, thus bleaching power. Perfumes useful for use herein do not cause loss of available chlorine outside the limits described hereinabove. The capacity of a perfume to meet this criteria is evaluated by comparing a composition with the perfume to a composition without, to account for the loss of available chlorine which is not due to the perfume.

In both, the available chlorine is measured in the fresh compositions, i.e. just after they are made, and in the same compositions after 5 days storage at 50 °C, using the method described for instance in "Analyses des Eaux et Extraits de Javel" by La chambre syndicale nationale de L'eau de Javel et des produits connexes, Pages 9-10 (1984). The % loss of available chlorine is then calculated.

By perfume, it is meant herein individual perfume components as well as mixtures thereof. Bleach stable perfumes include components in the class of acetals, aldehydes, esters, alcohols, ketones, ethers, nitriles, terpenes, as well as miscellaneous materials, including materials of natural

origin. More specifically, suitable acetals components include 1,2,3,4,6,7,8-octahydro 2,3,8,8-tetramethyl -2 acetal naphthalene, available from IFF under the trade name Iso E Super <sup>®</sup>, octane 1,1-dimethoxy acetal, commercially available from Dragoco under the trade name Resedyl Acetal <sup>®</sup>, 1,3-dioxane 2,4,6-trimethyl 4-phenyl acetal, commercially available from Dragoco under the trade name Vertacetal <sup>®</sup>, 1,3-dioxolane 2-hexyl acetal, commercially available from Dragoco under the trade name Ylamone <sup>®</sup>, phenylacetaldehyde dimethyl acetal, aldehyde dimethyl acetal, citral diethyl acetal, and acetaldehyde phenyl ethyl propyl acetal. Suitable perfume components within the class of esters include dihydro terpinyl acetate, tetrahydro linalyl acetate, benzene propanol-trimethyl acetate, commercially available from Dragoco under the trade name Vetikol Acetate <sup>®</sup>, ortho tertiary butyl cyclohexanol acetate, ortho tertiary amyl cyclohexanyl acetate, Fenchyl acetate, Iso bornyl acetate, styrallyl acetate. Suitable perfume components within the class of alcohols include 4-tert-butylcyclohexanol, dihydro terpineol, tetrahydro geraniol, tetrahydro myrcenol, tetrahydro linalol, fenchyl alcohol, dimethyl octanol, 2,5-dimethyl heptan-2-ol, commercially available from IFF under the trade name Dimetol <sup>®</sup>, phenyl methyl ethyl carbinol, dimethyl benzyl carbinol, dimethyl phenyl ethyl carbinol. Suitable perfume components from the class of ketones include Menthone, Iso menthone racemic, dimethyl octanone, Fenchone-1,1,3-trimethyl bicyclo-1,2,2-heptanone 2, benzophenone. Suitable perfume components from the class of ethers include monoterpenes and cyclic monoterpenes ethers, commercially available from Givaudan Roure under the trade name Lime Oxide <sup>®</sup>, diphenyl oxide, iso amyl phenyl ethyl ether, paracrasyl methyl ether, phenyl ethyl methyl ether, beta naphthol methyl ether, methyl diphenyl ether.

Suitable perfume components in the class of nitriles include 3-cyclopentane 2,2,3-trimethyl 1-acetonitrile, commercially available from Dragoco under the trade name Cantryl <sup>®</sup>, bicyclo [2.2.1] heptane-2 carbonitrile, commercially available from Dragoco under the trade name Romaryl <sup>®</sup>, 5-phenyl-3-methyl-pentaneacid nitrile, dodecanenitrile, tetrahydro geranyl nitrile. Suitable terpenes as perfume components herein include para cymene and terpinolene. Suitable materials of natural origin include essential oils and resins such as eucalyptus oil, cistus oil, patchouli oil. Finally, suitable miscellaneous materials include eucalyptol and 2,4,6-trinitro-3,5-dimethyl-tert-butyl benzene. The compositions according to the present invention typically comprise from 0.000002% to 2% by weight of the total composition of said perfume, preferably from 0.000005% to 0.5 %.

As a highly preferred ingredient, the compositions according to the present invention further comprise a bleach-stable perfume solubilizer, i.e. a surface active ingredient which helps the homogenization or solubilization of the perfume in the composition. Suitable bleach-stable perfume solubilizers include amine oxides, alkyl ethoxy methyl carboxylates, alkyl phenyl ethoxy methyl carboxylates, diphenyl oxide sulphonates, sarcosinates, taurates, betaines, quaternary ammonium salts, sulphates, sulphonates, and mixtures thereof. Preferred for use herein are amine oxides, alkyl ethoxy methyl carboxylates, alkyl phenyl ethoxy methyl carboxylates, diphenyl oxides and mixtures thereof. The compositions according to the present invention typically comprise from 0.000001% to 20% by weight of the total composition of a perfume solubilizer, preferably from 0.000002% to 5%.

The present invention further encompasses a method of bleaching fabrics which comprises the steps of first contacting said fabrics with a composition according to any of the preceding claims, then allowing said fabrics to remain in contact with said composition for a period of time sufficient to bleach said fabrics, typically 5 to 60 minutes, preferably 5 to 30 minutes, then rinsing said fabrics in water to remove said composition. If said fabrics are to be washed, i.e. with a conventional composition comprising at least one surface active agent, it is preferred to perform the method herein before said fabrics are washed. Indeed, it has been observed that bleaching said fabrics with the compositions according to the present invention prior to washing them with a detergent composition provides superior whiteness and stain removal with less energy and detergent than if said fabrics are washed first, then bleached. Accordingly, said method according to the present invention further comprises a subsequent step where said fabrics are washed with a detergent composition comprising at least one surface active agent.

The present invention will be further illustrated by the following examples.

#### Example 1

A composition of pH 13.1 is prepared which contains 5% available chlorine, 0.7% sodium hydroxide, 1% sodium carbonate, 0.02% benzophenone, 0.02% nonyl phenyl ethoxy(7) methyl carboxylate and water up to 100%. In said composition, the loss of available chlorine is the same with and without benzophenone and amounts to about 14% loss of available chlorine in 5 days at 50 °C.

#### Example 2

A composition of pH 13.2 is prepared which contains 5% available chlorine, 0.7% sodium hydroxide, 1% sodium carbonate, 1.0% sodium silicate, 0.03% tetrahydromyrcenol, 0.04% nonyl phenyl ethoxy(7) methyl carboxylate, and water up to 100%. In said composition, the loss of available chlorine is the same with and without tetrahydromyrcenol and amounts to about 14% loss of available chlorine in 5 days at 50 °C.

#### Example 3

A composition of pH 13.2 is prepared which contains 5% available chlorine, 0.8% sodium hydroxide, 1% sodium carbonate, 0.03% tetrahydroxynalool, 0.07% nonyl ethoxy(5) methyl carboxylate and water up to 100%. In said composition, the loss of available chlorine is the same with and without tetrahydroxynalool and amounts to about 16% loss of available chlorine in 5 days at 50 °C.

#### Example 4

A composition of pH 13.0 is prepared which contains 5% available chlorine, 0.7% sodium hydroxide, 1% sodium silicate, 0.03% fenchylacetate, 0.08% nonyl ethoxy(5) methyl carboxylate, and water up to 100%. In said composition, the loss of available chlorine is the same with and without fenchylacetate and amounts to about 16% loss of available chlorine in 5 days at 50 °C.

#### Example 5

A composition of pH 13.2 is prepared which contains 5% available chlorine, 0.8% sodium hydroxide, 1% sodium carbonate, 0.03% ortho tertiary amyl cyclohexanyl acetate, 0.1% diphenyl oxide, and water up to 100%. In said composition, the loss of available chlorine is the same with and without fenchylacetate and amounts to about 16% loss of available chlorine in 5 days at 50 °C.

#### Example 6

A composition of pH 13.0 is prepared which contains 5% available chlorine, 0.7% sodium hydroxide, 1% sodium silicate, 0.03% eucaliptol, 0.04% nonyl phenyl ethoxy(7) methyl carboxylate, and water up to 100%. In said composition, the loss of available chlorine is the same with and without fenchylacetate and amounts to about 16% loss of available chlorine in 5 days at 50 °C.

## Claims

comprising at least one surface active agent.

1. An aqueous liquid bleaching composition suitable for use in diluted form, comprising a bleaching amount of an alkali metal hypochlorite and a bleach stable perfume, whereby said perfume causes no more than 10 % AvCl<sub>2</sub> loss in 5 days at 50 °c, said composition having a pH as is of from 11.5 to 14, and said composition further comprising pH buffering means whereby the pH of the diluted composition is buffered to a constant value throughout use. 5 10
2. A composition according to claim 1 which comprises from 2% to 10% by weight of the total composition, based on active chlorine, of hypochlorite, preferably from 3% to 6%. 15
3. A composition according to claims 1 and 2 wherein said perfume causes no more than 8% loss of available chlorine in 5 days at 50 °c. 20
4. A composition according to the preceding claims wherein said pH is of from 12.5 to 14. 25
5. A composition according to the preceding claims wherein said buffering means consist of carbonate or silicate, or mixtures thereof. 30
6. A composition according to the preceding claims which comprises from 0.000002% to 2%, preferably from 0.000005% to 0.5% by weight of the total composition of said bleach stable perfume. 35
7. A composition according to the preceding claims which further comprises from 0.000001% to 20% by weight of the total composition of a perfume solubilizer, preferably 0.000002% to 5%. 40
8. A process for the bleaching of fabrics which comprises the steps of: 45
  - first contacting said fabrics with a composition according to any of the preceding claims,
  - then allowing said fabrics to remain in contact with said composition for a period of time sufficient to bleach said fabrics, 50
  - then rinsing said fabrics in water to remove said composition. 55
9. A method according to claim 8 which further comprises a subsequent step where said fabrics are washed with a detergent composition



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## EUROPEAN SEARCH REPORT

Application Number

EP 93 87 0070

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 287 079 (R.ROBINSON) * column 2, line 11 - line 21; example 4 *	1,5-7	C11D3/395
X	GB-A-2 076 010 (SANDOZ) * page 5, line 11 - line 12; claim 8 *	1	
X	EP-A-0 030 401 (UNILEVER) * page 5; examples G,H *	1	
X	EP-A-0 204 472 (PROCTER & GAMBLE) * page 16; examples 1,2 * * page 11, line 30 - line 32 *	1-7	
X	US-A-3 876 551 (P. LAUFER) * examples IV-VI *	1,8	
X	EP-A-0 186 386 (PROCTER & GAMBLE) * page 5 - page 6 *	1,8,9	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			C11D D06L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 SEPTEMBER 1993	Examiner PFANNENSTEIN H.
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure F : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			